

A
DISCOURSE

Concerning the

CAUSES and EFFECTS

OF

CORPULENCY:

Together with

The METHOD for

Its Prevention and Cure.

By THOMAS SHORT, M. D.

The SECOND EDITION.

L O N D O N:

Printed for J. ROBERTS, near the *Oxford Arms*
in *Warwick-Lane.* M.DCC.XXVIII.

DISCOURSE

OF

THE NATURE AND EXTENT

OF THE

THE NATURE

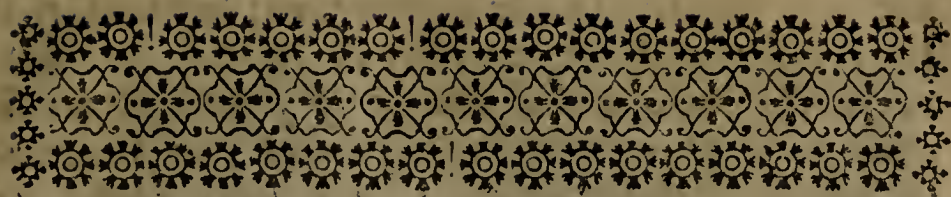
OF THE NATURE

OF THE NATURE

OF THE NATURE

OF THE NATURE

OF THE NATURE



THE P R E F A C E.



*I*D Men but seriously consider the Inconveniencies, Indispositions, and Dangers which attend a corpulent and bulky Habit, I believe very few would bring it upon themselves, either by Intemperance or Indolence; much less would they industriously promote it, in order to render themselves more personable, and make a more graceful and becoming Figure. If any Man is willing to sacrifice his Health, and the Vigour and Agility of his Body to such Considerations as these, he deserves to carry all the days of his Life, the utmost Load his nature is capable of. He is a Slave and a Drudge of his own making, and should you offer to help him off with his Burden, he would probably desire to be excus'd.

But tho we have nothing to say to such Patients as these, there are many others in the same unweildy Circumstances, who are justly intitled to our Care and Compassion; I mean, those who labour involuntarily under the Incumbrances of Flesh and Blood: who, as they did nothing to bring them upon themselves, so they would be glad to shake them off at any rate; I mean those who are fat by mere Constitution, or hereditary Disposition.

The P R E F A C E.

position. In these Cases it sometimes happens, that the troublesome Bulk increases in spite of an abstemious Regimen and a Course of severe Exercise. And perhaps neither Management nor Medicine is capable of reducing them to a lesser Habit, or preventing their Growth : Nevertheless, it's equally certain, that the use of proper Means would oftentimes, tho not always, contribute to the Relief of the Corpulent. Sometimes 'tis attended with absolute and entire Success ; and where it falls short of this, it is generally beneficial in some degree or other. It may not, therefore, be improper to take this Subject under Consideration.

Accordingly, I have enquir'd into the Causes which commonly produce such an undesirable Weight ; as also, the manner how it is done, and the Circumstances which attend it. I have likewise pointed out the Effects and Consequences of it ; laying open the Disadvantages of a gross Habit, and the Advantages of a slender, or middling one. And then I have proceeded to examine how far, and by what Methods immoderate Corpulency may be either prevented, or gradually lessen'd.—In short, whether Nature lays such a Load upon Men, or they lay it upon themselves, it cannot be an ill Office to attempt their Relief. When all Methods prove ineffectual, a Man has nothing more to do but to learn to bear his Burden patiently ; but for any one to drag it about him needlessly, argues a Stupidity and Sluggishness of Mind, equal to that of his Body.



A
DISCOURSE
Concerning the
CAUSES and EFFECTS
OF
CORPULENCY.



IS a just Observation of the learned *Boerhaave*, that *whoever can exercise the proper Actions of Life, with Ease, Pleasure, and some Certainty of Time, may well be esteemed to have a sound and healthy Body.* And 'tis this State and Condition only that truly deserves the Name of Health; for if these Things cannot be done, or are attempted with
Trouble,

8 *A Discourse concerning*

Trouble, Pain, and Uneasiness, the Person cannot be said to be in a State of Health, but in a morbid State, or under some Disease. And, since the greatest Part of corpulent People are incapable of much Action or Motion, without Trouble or Uneasiness, they may be truly said to be in a morbid State: The Occasion and Effects whereof shall be the Subject of our present Enquiry, and I shall account for the last from mechanical Principles: Which I shall endeavour to do in the following Method, *viz.*

I. I shall enquire what are the Causes of Corpulency in a human Body.

II. I shall shew briefly how the Fat is separated from the Blood.

III. Assign the several Services or Uses of Fat in an animal Body.

IV. I shall shew why some Constitutions are more susceptible of Fat than others.

V. I shall discover some of the Inconveniencies which corpulent People are more liable to than others.

VI. Lastly,

VI. Lastly, I shall point out the Means which may be safely used, to reduce an overgrown Habit to a livelier and better State of Health.

CHAP. I.

Of the Causes of Corpulency.

BY *Corpulency* I mean that gross Habit of Body which increases to such a prodigious Bulk, as either to hinder, prejudice, or render the Performance of the Actions of Life uneasy or painful; several Instances whereof we have in History, such as that of *Nicomachus Smyrnaeus*, whose Body, *Galen* says, grew to such a monstrous Bulk, that it could not be moved out of the Place it was set or laid in. And *Sennertus* saw a Man who weighed 400 *lib.* Weight, and a Woman who weighed 420 *lib.* Nay, I my self saw a young Lady, who died of Corpulency in the 25th Year of her Age, who weighed above 500 *lib.* she was a Monster in Nature for Bulk; and the most corpulent Man I ever did see, was to her

as a Man of a middle Habit is to one exhausted by an Atrophy. I believe no Age did ever afford more Instances of Corpulency than our own.

The immediate Cause of this Habit of Body is a great Plenty of Blood, stor'd with oily Parts, and not sufficiently attenuated and discharged by Perspiration; but as there is daily an Addition made to the Blood, so its oily Part is constantly straining off, and is deposited in its proper Receptacles.

But there are several remote Causes, which promote this plentiful Secretion of oily Parts from the Blood: And I. I shall speak of Air, which may promote Fatness several Ways. (1.) A warm and foggy Air, by the Diminution of its Elasticity, will impair the necessary and regular Perspiration of the Body, because its Particles mixed with the Blood cannot fully elevate and defend its Globules; but they run into closer Contacts, and cause greater and stronger Cohesions, than are consistent with the healthy State of the Fluid, or agreeable to the Purposes 'tis designed for: so that it becomes fiery,

ry, and indisposed for passing off by the Pores of the Skin. The Moisture of the Air at the same Time insinuates it self thro' the small Orifices of the Skin, mixes with the Blood, and increases its Quantity, fills the Pores, and obstructs them against the Force of their perspirable Matter: It relaxes the Fibres of the Body, diminishes the Contractility of the Vessels, renders them incapable to maintain the Circulation, with Force sufficient to break its Way thro' these Obstructions. But,

(2.) Corpulency may be promoted, not only by a foggy Air, but by the constant Air of wet, flat, and marshy Countries, as *Holland*, some Parts of *Lincolnshire*, *Essex*, and *Cambridgshire*, where the Air is filled with Moisture constantly exhaling from the Earth; which diminishes its Elasticity, and causes it to have the same Effects on the Body as a foggy Air, the Blood not being prepared for the necessary Secretions and Evacuations: Hence it lines the Insides of the capillary Arteries, and Orifices of the Glands with a slimy Lensor, which increases the

12 *A Discourse concerning*

Body's Bulk and Inactivity, relaxes the Fibres still more, and induces (if not a Corpulency) a Leucophlegmacy; or, as the slow Motion of the Blood gives Opportunity of a greater Attraction to its different Particles, so sometimes its oily Parts will come to a closer Contact with one another, and be strained off in a larger Quantity, and laid up in the *Vesiculæ Adiposæ*, whereby the Fat and Bulk of the Body are increased.

(3.) A City Air, for the same Reason, generally promotes Corpulency more than a clear, fresh, and sharp Country Air, because the Heat, and many different Exhalations in a City load and weaken the Spring and Motion of the Air, so that it has not that Force upon the Blood in the Lungs, to break and divide it; or, rather, the Diminution of the Air's Elasticity makes it incapable of that due Rarefaction and Expansion, when drawn into the Lungs, so as to blow up the Air-Vessels there.

(4.) Some Seasons of the Year contribute more to the Increase of the Body's Bulk than others, as in the Winter; which

which is partly occasioned from the Moisture of the Air, and its Effects, and partly from want of Exercise, and lying long in Bed.

(5.) The Inhabitants of woodland Countries, by reason of the Air's being filled with Moisture and *Effluvia*, may sometimes be more disposed to Corpulency, than those of an open dry Country; because these great Thickets overshadow the Earth, keep off the Rays and Warmth of the Sun from it, which should warm and dilate its Surface and Pores, by rarifying its contain'd Air, and so procuring an easier Penetration for the Rain when it falls down: By which Means the Surface of the Earth in such Places will be moister than in other Parts, where the Sun has an open and free Access, and so can display his Force. These Thickets also occasion a prodigious Quantity of watry and oily Particles, to be absorb'd by the Roots of these Trees, and emitted into the Trunks, Branches, Twigs, and Leaves; which must afford a vast Exhalation of Moisture from the innumerable Branches and Leaves in thick and large Forests.

14 *A Discourse concerning*

Forests. This must load the Air with Moisture, as the first Colonies of *America* felt to their Loss and Sorrow, before they had cut down a great Part of the Woods, and cultivated the Land, whereby the Air became more serene and dry, and the Country inhabitable by the *Europeans*. Dr. *Woodward* in his *Observations on Vegetation*, tells us, that the Moisture and Exhalation is very great in *America*, where he found, that thriving Plants expended so much Water, that in some the Expence of the Water was to the Growth of the Plant as 700 to 1; while the Water in a Glass that had no Plant to nourish, continued the same at the End of the Experiment, that it was at the Beginning. The languishing and decaying of the Leaves of Trees by the Heat of the Sun in the Day-time, is another Argument to prove the vast Exhalation wherewith the Air is filled; for by the Heat of the Sun, or even the Rarefaction of the Air by Light, the Tracheal or Aerial Vessels of Vegetables have their contain'd Air rarified and expanded to an *Æquilibrium*, with the external Atmosphere;

phere ; which Expansion of the Air in the Aerial Vessels, compresses the Vessels containing the Liquid, that is absorb'd from the Earth, for the Nourishment of the Plant ; and this Compression straitens the Vessels containing the Liquid, and propels their Liquid perpetually all Day ; and this propels on, the Waste of the Liquor being always in proportion to the Heat causing the Rarefaction of the Air : For if the Day be very warm, the Expence is so great, that the Leaves languish, hang down, and seem to wither, till the Night return ; and then the Tracheal Vessels are contracted, and the Vessels containing the Liquid are relaxed and expanded ; then the Tree as it were eats and drinks all the Night, till it is sufficiently nourished again, and has recovered the Day's Waste ; next Morning its Leaves are fresh and green, and the Vessels that contain the Liquid are trigg'd and full, and their drooping Heads raised up : So that the Day wastes, and the Night nourishes Vegetable as well as Animal Bodies. Thus we see that a moist and foggy Air, especially if Warmth be joined with it, cau-

ses either a larger Secretion of Oil from the Blood, and laying it up in the *Vesiculæ Adiposæ*, or occasions the depositing of a slimy *Lentor* on the Insides of the Vessels, and so a Leucophlegmacy; both which increase Corpulency, but chiefly the last.

2. Plenty of Eatables and Drinkables, of a soft, smooth, balsamick Nature, (free from such sharp, austere Particles, as abrade, cut or tear in their Passage the Coats of the small Vessels) which cause no uneasy or painful Sensation in any Part of the Body, so as to disturb Secretion and Rest, do greatly promote Corpulency. The Meats which seem more particularly adapted to this Purpose, are, (1.) Sweet, fat, or oily Things, which nourish much, and quickly lay in large Store into Vesicles or the small Bladders, prepared for the receiving and containing of Oil, their Substance being very similar to these Parts of our Bodies. *Galen* says, *Sweets are the Basis of all Nourishers*: But this does not hold in bilious Constitutions; for in such, Sugar, Honey, &c. easily

ly change into Bile; just as bitter, acrid, sharp, and austere Things are not only unpleasant to the Taste, and ungrateful to Nature, but promote the extenuating and depauperating of the Body.

(2.) Such Kind of Food as is easily and readily assimilated into the Nature of animal Fluids; as in nutritious Floods of easy Digestion.

(3.) Those Things, which tho they fit easy upon the Stomach, and go soon off, yet are of such a tenacious Nature, that they cannot be so quickly attenuated, and ground down into such minute Parts, as can readily enter the secretory Vessels, and be eliminated and expelled the Body, *viz.* Eggs, Rice-Milk, all Shell-fish, as Oysters, Crabs, &c.

(4.) All fatulent and mucilaginous Eatables, as Pease, Beans, Artichokes, and all viscid Provisions.

This is the *Criterion* of wholesom Food, that it be of that friendly and similar Nature, that, when digested, and arrived at the Parts it should nourish, it occasions no Uneasiness or Disturbance, but is readily applied and assimilated to

C

the

the Parts without disturbing the Balance of Nature, and Functions of Life and Health.

Soft, smooth Drinkables are such as are not clogg'd with acid, acrimonious, saline or tartarous Parts, *viz.* Milk and Water, Milk by it self, especially of Asses, soft, mild Malt Liquors, Mountain, Tent, and Malaga Wines, either drank alone, or with Water.

3. A moderate even Digestion of these sorts of Food is no less necessary; for, if it be too quick, the Food is hurried out of the Body by some Evacuations, before its nutritious Parts be separated, and applied to their proper Places; whereby the Body will be so far from turning corpulent, that it must decay and languish; or, if the Digestion be weak and slow, the Food affords not sufficient Reparation in Proportion to the Body's Waste, from its several Discharges, and constant Loss of Substance; therefore it must waste, and not grow fatter.

4. 'Tis necessary, that the Ventricle or Stomach be free from sharp, sour, and acrimonious Humours, whether they be discharged

charged into it from the Mouths of its secreting Tubes or Glands, or pump'd up from the Guts, Liver, and Sweet-Bread; for these vitiate the Chyle, communicate the same Taint to the Blood, stimulate the Solids, contract the nervous Fibres, and often cause uneasy and painful Sensations.

5. 'Tis requisite that the Insides of the Intestines be clean, not furred up with viscid Slime, or ropy adherent Matter filling their Valves; which either hinders the Filtration of the Chyle, or cloyes the Mouths of the Lacteals. And where the intestinal Tubes are thus inactive, the Chyle sent into the Body will be indigested and unprepared, leave a slimy Lentor on the Insides of the capillary Arteries, and produce a Leucophlegmacy, without due and timely Care to prevent it.

6. The Blood it self must be in a healthy Condition, not filled with Salts; for these by their Solidity wear and tear the Vessels as they pass along, and by their Pungency contract the Vessels and Fibres; nor must the Blood be very viscid, and

20 *A Discourse concerning*

abounding with preternatural Cohesions, for these prevent its free and plentiful Access into the delicate Capillaries, which run upon the *Membrana Adiposa*; or, if it gets in, 'tis in Danger of occasioning Obstructions and Diseases.

7. There must be no constant or frequent excessive Evacuations; for these hasten the Fluids out of the Body, before the Secretions be finished, or the nutritious Parts be applied and assimilated to the Sides of the Vessels for their Nourishment or Growth; therefore all great and frequent Hæmorrhages of the Blood, great Looseness, Diabetes, profuse Sweating, or immoderate Perspiration, are all combined Enemies to Corpulency.

8. Gentle and easy Exercise of the Body causes a due Circulation of the Blood, from the larger and lesser to the most minute Vessels over the whole Body, without much Dissipation of its Parts; preserves some Degree of Strength in the Solids, and Elasticity of their Fibres, whereby the Blood is more broke down and better mixed; the oily Part comes the easier to the Mouths of its
reci-

recipient Vessels, and the Body is capable of receiving Addition from each Assumption of Food; its Habit is increased and not diminished by good Blood being sent out (for Plenty thereof causes a Corpulency) into the most minute distant Recesses; 'tis corroborated and strengthened, and the hurtful Attrition and Exhalation of its Parts are prevented as much as possible. Now tho this gentle Exercise promotes a Corpulency, not accompanied with such sensible and manifest Inconveniencies, yet a total Remission of usual and necessary Exercise is a more effectual Cause of a morbid Corpulency; for by Sloth and Idleness the natural and necessary Evacuations, especially by Perspiration, are diminish'd, the Vessels are distended with Fluids, and this Distension spoils or impairs the Stiffness and Vigour of the Solids, which is what keeps every Animal from a natural paralytick State. The Infant has its Struggles and Motions in the Womb, and after its Birth, the Nurse takes Care to accustom it first to sit in an erect Posture; then, as its Fibres become stronger,

ger, to stand; and, at length, to walk and run. These Motions invigorate its Solids, give them a proper Tone, and preserves the Creature from a perpetual Deprivation of the Use of its Limbs, prepare the Nerves for an easier and fuller Reception of animal Spirits, give them a greater Elasticity, make them healthy, and fit for the necessary Fatigues of Business and Life; and, till Children are able to go, the Agitation in the Cradle very much supplies the Want of Exercise; for in Adults, when Exercise is remitted long, the Muscles cease to play sufficiently, and to act upon the Blood, so as to prevent a Lintor; hence it becomes siezy, or its oily Parts attract one another. Heat is also the Effect of Exercise, for it proceeds from an accelerated Motion of the Blood, which is the Product of an increased, or exerted Vigour of the Solids, which briskly act upon the Fluids. When this Vigour is weakened by Idleness, a Distension or Plethora on the Vessels ensues, even to the benumbing of the Parts, whereby the Evacuations are diminished, and the Fluids daily get Ground
of

of the Solids, till a Leucophlegmacy comes on, which is the worst Sort of Corpulency, and is only the Beginning of an universal Dropsy.

9. Serenity of Mind must accompany all these; the Passions must be duly regulated, which are of two Sorts, elevating or depressing; the last are quite opposite both to Health and Corpulency; but the first, *viz.* Love without Fear, Hope without Despair, and Joy if moderate, cause a free, sweet, and pleasant Circulation of the Blood, and a proper Attenuation and Mixture of all its Parts, fit the Blood for Secretion by the lateral adipose Vesicles joined to the capillary Arteries. A chearful Temper contributes much to fatten the Body; for by Laughter, the Action, or small Convulsion, of the Muscles of the Belly, the Breast, Neck and Face, squeeze out the soft, slippery and oily Particles from the Blood in the small evanescent Arteries, and drives them into these small Arteries in active adipose Bladders there to be stor'd up. Hence the Proverb *laugh and be fat*, is not without its Reason and Philosophy.

But,

24 *A Discourse concerning*

But, if any of these Passions, Love, Joy, or Laughter (which is a Convulsion) exceed their just Bounds and due Moderation, they cause a Contraction of the Fibres, turn the Fluids into violent Motion, and cause a violent Evacuation by Sweat, Urine, Stool, and insensible Perspiration: But if Laughter be continued to a great Excess, it winds up the Spring of the Fibres still higher, and throws them into a violent Convulsion; for not only are the Evacuations stopt, but also the Circulation it self in these Parts; and, without sudden Remission, Life it self is in the utmost Hazard: And this is the Reason why People may be tickled, and laugh themselves to Death.

10. Frequent tippling and drinking soft Wines, or mild Malt Liquors, greatly encourage or increase Corpulency, by filling and dilating the Tubes of the animal Body, and affording Plenty of Oil to distend the membranous Lobules: Hence Alehouse-keepers and Pot-Companions are generally of pretty bulky Bodies.

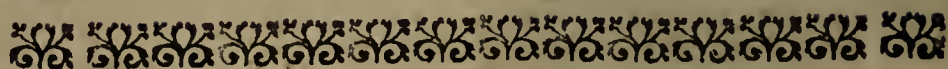
11. Lying soft and warm softens and relaxes the Fibres, and prepares the Vessels

fels for the Reception of the full Strength of the Blood.

12. By frequent, long, and sound Sleep, the Body is plentifully moistened; all the nutritious Parts of the Body being turned into good Chyle, and the Chyle into Blood, which, circulating strongly, equally, and slowly, penetrates all the Parts of the Body, enters the smallest Vessels, and affords the largest Secretion: But if Sleep be too long, the Parts become so relaxed, that, at last, they wholly lose their Tone, stand still, and the Person dies. If Sleep be too short, the begun Digestion is interrupted, Secretion hinder'd, and due Nutrition prevented.

13. Excessive Venery breaks the Constitution, destroys the Elasticity of the Solids, and wastes the whole Body; but moderate Venery promotes Corpulency, after the same manner as gentle Exercise, and moderate Laughter.

I might lastly add Indolency of Mind, as a Promoter of Corpulency, but I need not enlarge on it.



C H A P. II.

How the Fat is separated from the Blood.

THE next Thing proposed, was briefly to enquire, How the Fat is separated from the Blood. 'Tis by the Distribution of innumerable capillary Arteries, which in all Parts of the Body, in some sort, cover the Cells of the Adipose Membranes, wherever they are to be found. These Arteries are display'd with a kind of Network, till they terminate in Veins, which in like Manner abound in these Membranes. These Capillaries, by the Help of lateral Emissaries betwixt the fatty Vesicles, separate a thin, fine Oil from the Blood, which is deposited into the Adipose Vesicles; and this Disposition requires no other Condition, but an easy and ready Admission into the sundry Vesicles, *more cribrationis*, or by what-

whatsoever Name or Mechanism others please to explain Glandular Secretion.

That the Fat is in the Blood is proved from this Observation : In dissecting dead Bodies, some have observed many small shining Drops of Oil on the Surface of the Blood gushing out of a cut Vessel. The whole of the *Membranæ Adiposæ* consists of small Bags, like to the Balls whereof the conglomerated Glands are composed ; these little Bags are filled with pinguiferous Globules, to which the sanguiferous Vessels come and are contiguous ; which Structure we have much more easily and plainly discovered in Tumours and Excrescencies of the fatty Membrane, which seem to owe their Origin to a Laxness of these little Bags, or to some Compression or Obstruction of the returning Vessels. We need not question but the Fat is brought into the Vesicles by the Arteries ; for these *sacculi* have been found, not only in young but adult Animals, full of Blood with Fat, but more frequently and especially in hydropick Bodies, which have been observed full of bloody Serum mixed with Oil or Fat, re-

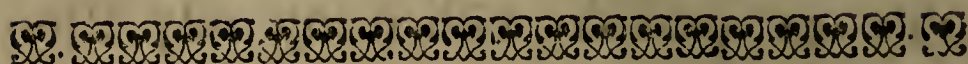
28 *A Discourse concerning*

sembling Flesh in the first, and Jelly in the last: And probably the Fat is again returned from these little Bags by the Veins wherefore 'tis not incredible, that besides the Blood, Lymph, and Spirits, the Fat also has its own Circulation: But what the Vessels are in which it moves its Round, I refer the Reader to consult *Malpighius*, *Magnetus*, and *Morgagnius*; the last of these Writers, with very good Reason, thinks them no other than the Veins; for proper Vessels seem not necessary seeing whatever can be ascribed to them, may be explained by the sanguiferous Vessels: For 'tis granted that the Arteries communicate with the *Cellulae Adiposae*; and *Malpighius* plainly shews the Communication of these *Cellulae* with the Veins, when he testifies, that both in Frogs and other Animals, having compressed them particularly from the *Striis Adiposis* to the Trunk of the *Vena Porta*, he saw real small Drops of Oil carried with the Blood in the same Veins to the Cavity of the Liver. But as such Observations seem to prove the Return of the Fat into the Veins in general, and into that

that of the *Porta* in particular, so they confirm that Use of the Caul proposed by the learned Dr. *Boerhaave*, viz. Seasonably to provide with many oily Particles the Blood that goes to the Liver for the Separation of the Bile. And, if we admit this to be the Use of the Caul, we may safely add this, viz. to mix with the Blood ascending by the *Meseraick* Veins from the Intestines to the Liver, many of these oleaginous Particles, wherewith 'tis filled out of the *Cellulæ Adiposæ* for the same End. The Caul likewise has this Use, to keep up the Lubricity or Slipperyness of the Guts, and facilitate their peristaltick Motion.

The Guts from their Vicinity to the Caul may have some of their contained Acrimony obtunded, which otherwise might occasion Pain, Uneasiness, or Inflammations; so that the commonly assigned Use of the Caul must either be wholly false, or at best only secondary, viz. to preserve the Warmth of the Stomach and Guts, and so promote Digestion; For if this be true, such as have the smallest

30 *A Discourse concerning*
est and poorest Caul, would have the
weakest and least Digestion.



C H A P. III.

Of the Uses of the Fat.

TO shew the Uses of the Fat in a Human or Animal Body, was the third Thing I propos'd to do.

1. *Bartholine* and *Schenckius* say, that hereby Softness and Agility are preserv'd in the Muscular Parts, *viz.* by the Fibres being anointed with Oil, especially the Skin, which clothes the Adipose Membrane; otherwise the Force of the Atmosphere, Heat of the Air, &c. might be ready to parch and discolour it.

2. They say, that in Time of Want or Famine the Fat returns into the Blood, and serves for the Nourishment of the Body. I am satisfied that this is true, both from some Sheep I have seen, which lay hid under a great Heap of Snow for thirty Days, and came out after the
Thaw,

Thaw, scarce able to step, yet they recovered and did well; and also from some Men working in Lead Mines; where the Shaft fell upon them, and continued so five Days, till the People clearing the Shaft again to get down to the Mines, when they came to the Bottom, to their great Surprize they found these Men alive who had been shut up, and who recovered and did well.

But let us consider how in such an extraordinary Case the Fat returns into the Blood, and serves for Nourishment.

(1.) This is by its sheathing up, or blunting the Salts of the Blood, and thereby obtunding its Acrimony; and by preventing the saline sharp Particles from impairing and abrading the small capillary Vessels.

(2.) By shutting up or straitning the Pores of the Skin, from its gross unctuous Parts getting into these Glands and secretory Ducts, where they stick and straiten the Canal, and retard the sudden Diffipation of the Body's small Moisture; the Coats of the Vessels over the Body being not a little straitned or contracted,
the

32 *A Discourse concerning*

the Fibres of the constituting Membranes come cloſer to one another, make the Coats denſer and more compacted, whereby the Fluids find a great Difficulty to make their Eſcape.

But the Reaſon why we may ſuppoſe the Fat returns from its Veſicles into the Blood, and mixes again with it, is, becauſe the Fluids of the human Body at ſuch a time wanting Supply, ſtill diminifh the Solids, which likewiſe are not provided with ſufficient Nouriſhment; they ſhrink, empty gradually upon every Circulation, and contract by Degrees; the Diameters of their Cavities ſhorten, the Lobules containing the Fat collapse, and are likewiſe compreſſed by the ſhrinking of the circumjacent Solids; and the Oppoſition of the Blood in the Veſſels not being ſo ſtrong, the oily Particles are again thrown back into the capillary Veins, which are not only contiguous, but continuous to the membranous Cells; at the ſame Time the Preſſure of the Atmosphere contributes its Aſſiſtance, by compreſſing with its Weight the Body's whole Surface,

face, and promoting the Contraction of the Solids.

3. The subcutaneous Fat is a Defence to our Bodies from the Injuries of Weather, whether hot or cold, by preventing in the first a sudden and excessive Dissipation of the Parts of the Body by too large a Transpiration: And in Cold 'tis a Medium between the Muscles and it; for the chill Air might cause a too great Crispation of the Fibres, lean Persons being often liable to Shiverings in very cold Weather.

4. Fat not only lubricates the Solids, but facilitates some necessary Secretions, by preventing too great a Rigidity in a cold Season.

5. It mollifies and relaxes the Fibres, and promotes the Dilatability of the Parts.

6. It beautifies the Body, by hiding the gaping Interstices of the Muscles, which would make the Body appear less agreeable and beautiful.

7. 'Tis instead of a Pillow for some Parts of the Body to rest upon, lest the Pressure of the Parts against external so-

34 *A Discourse concerning*

lid Bodies, might retard the Circulation of the Blood in the Capillaries, or confuse or benum the Nerves. Thus 'tis of special service in the Soles of the Feet, Palms of the Hands, and Hips.

8. Fat assists in the Support of the intercurrent Vessels in its Membrane from the Muscles to the Skin, and back from that to the Body.

9. When the Blood is full of Salt and acrimonious Particles, 'tis unfit for the Nourishment of the Parts without a Mixture of Fat, to sheath their sharp Points and Angles.

Notwithstanding all these good Services we reap from the Fat, yet 'tis only to be understood when its Quantity is moderate and not excessive; for *omne Nimum vertitur in Vitium.*

C H A P.

C H A P. IV.

Why some People are more disposed to Corpulency than others.

THE next Thing to be done, was, to consider why some Persons are more susceptible of Fat, and liable to Corpulency than others. The Reasons whereof I presume may be,

1. A greater Opportunity and Indulgence of the Causes of Corpulency, as Idleness, feeding freely on the most nutritious and rich Foods, drinking the smoothest and oilyest Drinks, lying long a-Bed, and sleeping much, with all other Things that encourage and invite a Laxness, and Dilatability of the Fibres.

2. A natural greater Dilatability of the Fibres in some than in others; for some Mens Fibres are naturally so stiff and rigid, that, suppose all the former Causes of Corpulency should concur, yet 'tis impossible to alter the State of their Fi-

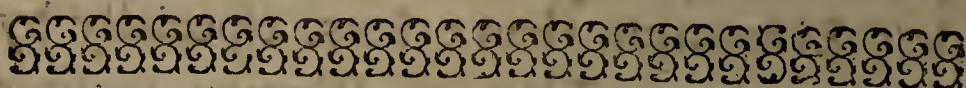
bres : Others, on the contrary, have such flexible, lax, and dilatable Fibres, that even Temperance, Exercise, Study, Abstinence, and Abridgment of Rest and Sleep, cannot prevent Corpulency, altho they eat and drink no more than what is requisite to answer the necessary Demands of Life. But should the first, by Indulgence of Appetite and Intemperance, affect and strive to obtain a corpulent Habit, they may certainly expect their Wantonness to be succeeded by a *Plethora*, productive of those Diseases which owe their Rise to too great a Quantity of Blood in the Body, as a Dilatation of the sanguiferous and lymphatick Vessels, an Alteration and Obstruction of the Secretions, a Compression both of Veins and Lymphaticks, a Stop of the Circulation, inflammatory Fevers, and other Diseases from Inflammations, a breaking and tearing of the Blood-Vessels, Imposthumations, Gangrenes, and Death it self. And altho such whose Fibres are thus indilatable and stiff, are more likely to come to wrinkled Brows, and other Symptoms of old Age than others, yet have they
very

very considerable Advantages of such whose Fibres are naturally lax and soft. But, to explain the Cause of this different Tension of the Fibres in sundry People, would oblige me to account for the various Temperaments of Men, which is not my present Design under this Head.

3. Another Reason may be, that People naturally disposed to Corpulency have less Evacuation than others, especially by Perspiration: Thus all Women perspire less than Men, and therefore are more liable to a *Plethora*.

4. The pinguiferous Vessels or lateral Ducts, going off from the extreme capillary Arteries to the adipose Membranes, may be larger in some than in others: Hence a greater Secretion of Fat is in the Lobules; for we see every Man has some Secretion larger than others; therefore the Evacuation of secreted Matter from these Glands is more liberal: So some have wider salival Strainers than others, and spit more. The venal Glands of others make a more plentiful Secretion of Urine than the Kidneys of others;

others; and yet perhaps the last perspires more than the former. And this is generally the Case of thin, slender People, or such as have very plastick Fibres, or use much Exercise; some have frequenter Stools than others: And so fat People may have larger collateral Vessels going from the capillary Arteries of the adipose Membranes to the oily Vesicles.



C H A P. V.

Of the Inconveniencies which corpulent People are more liable to than others.

WE now come to the fifth Thing to be treated of, *viz.* The Inconveniencies which corpulent Persons are subject to; but we shall first shew some of the Advantages lean People have of the fat and corpulent. And here I do not understand by lean People walking Ghosts, or living Skeletons, who have an Atrophy or *Marasmus*; but I mean those who have
a thin

a thin Habit, consistent and accompanied with Health, which has neither sensible Superfluity, nor Deficiency of animal Juices. On the contrary, I do not speak of that sutable and becoming Fatness which is attended with Health, Pleasure, Activity, and Strength : but of that Fatness which renders Motion or Action, if continued for a very few Hours, troublesome, painful and uneasy, which to others is grateful and delightful. This is that Corpulency I treat of here, which is undeniably a morbid State.

1. Such lean People can with more Ease, Alacrity, and Constancy, go thro' the necessary or pleasurable Actions of Life, with unspeakably less Toil, Weariness, Trouble, and Fear, than corpulent Persons are capable of bearing, or dare encounter with.

2. Lean People generally enjoy a far greater Measure of Health, if they maintain a moderate and good Use of the Nonnaturals ; for their Bodies not admitting of much Fat or Corpulency, they are secure from such Diseases, as a corpulent Habit of Body exposes Men to ; and
at

40 *A Discourse concerning*

at the same time the Bodies of lean People admit of sufficient Fluids to answer all the Demands of Nutrition and animal Spirits.

The Dilatability of the Fibres of corpulent People must first impair, and, when become exceeding fat, will, in a great measure, weaken the Force of the Solids; hence the Evacuations are diminished, the Vessels are more filled with Fluids, Secretions are interrupted and changed, all the Juices are vitiated, and the Gout, Leucophlegmacy, Dropsies, Lethargies, fundry Tumours, &c. supervene; because the Blood not being forcibly enough propelled by the Solids, its Circulation becomes languid, and its fundry Parts are at liberty to attract one another: Moreover from an unequal and undue Mixture, Concretions must happen in some Parts, as Polypus's in the Heart and great Vessels, rending and breaking of the small, such as the Lymphaticks, by their being overfilled with Fluids, and compressed without by Fat and other distended Vessels, which straiten their Cavities, so that they are unable to resume
their

their former Elasticity; whereas the Solids of lean People being more compact, and the Parts of their Fibres, as well as the Fibres themselves, firmly connected with one another, must have and maintain a greater Command over all the Fluids, break and mix them thorowly; whereby the Secretions will be better performed, and the separated Fluids better prepared, and fitter for their Intentions; the nutritious Matter will be fully digested, and the Evacuations duly discharged, being neither too speedily eliminated, nor too long retained: So that all the Actions of Life, and Secretions of the Body are more duly and better performed in slender and healthy Persons, than in corpulent, even suppose they may enjoy a seemingly healthy State.

3. As slender People are generally the more healthy, so when they are out of Order, they are frequently easier and sooner restored to Health, because their Fluids are seldom so vitiated, (except from some external Cause, or some great Loose of Intemperance) and likewise because there is no such Repletion in their

F Bodies,

42 *A Discourse concerning*

Bodies, requiring a long Time to reduce it to a due Standard or natural Quantity ; and also because their Vessels and Canals are generally more clear, not having their Infides furred up with a slimy Lensor from a Depression of the Ballance of Nature below the just Standard: Or, suppose, by catching Cold, or the like, their Blood may be somewhat viscid, yet by lessening its Quantity, and pouring into it diluting Liquours, it may be restored without much Danger, Trouble, or Loss of Time : For the Tone of the Vessels is easily recoverable, and their renewed Vigour mixes all the Fluids, and restores their natural and healthy Fluidity.

4. Thin, healthy People may, with more Probability, expect long Life, than they who are gross and corpulent: For, besides the former Reasons, the greater Stretch or Circumference the Blood has to go, the more Strength is undoubtedly necessary in the Heart to throw forth its Crimson Liquor into the great Artery, that it may reach all the Parts of the Body ; and the greater Force where-with the Heart acts, so much sooner must

must the Spring of its Fibres be weakened, till it thus be gradually destroyed and worn out. But, on the other hand, the larger Circuit the Blood has to go, it must proportionably lose of its Motion in the capillary Vessels, which may occasion the Parts to attract in the slow Course of the Blood; many of its Particles must form different *Moleculæ* in the Vessels, which to break, dissolve, and mix again with the Blood, requires a greater Strength; and this becomes a new superadded Work for the Heart, Lungs, and Muscles: And besides, from this slow Circulation, and this Increase of the Body's Circumference, still more Fat must be separated, and laid up in the Vessels that contain the Oil; whereby the Body's Dimensions are enlarged, the Compression of the Vessels increased, the Elasticity of the Fibres daily more weakened, their Cohesion lessened, the Fibres constituting the Membranes more separated, the Force of the Solids impaired, and the Cavity of the Thorax diminished by the prodigious Quantity of Fat accumulated at the Base of the Heart, and

Trunks of the great Vessels: The Space for the Trunks to play in will be lessened, the Quantity of Air taken in the Lungs be decreased, the Blood-Vessels of the Lungs be insufficiently compressed, and their contained Blood not fully broken, nor its Parts mixed, nor the Heart's Motion retarded.

How indifferently then, and often perniciously, do such act, who have made themselves Victims to Luxury and Appetite? How unbecoming is such a Practice to an intelligent Mind?

From this Chain of reasoning we are let into the Reasons why some corpulent People are more obnoxious to the Gout and Arthritick Pains: Because,

I. Their Blood has so great a Circumference to go, that, when it arrives near the Surface of the extreme Parts of the Body, its projectile Force is become so exceeding weak, that Power is wanting to propel the perspirable Matter thro' the Ducts and excretory Vessels of the miliary Glands; therefore must it stick in the imperceptible Cells of the Fibres of the Nerves; and, having still new Mat-
ter

ter thrust upon it, it forms larger Bodies than the small exquisitely sensible Tubes can easily contain, without being stretched, prick'd and pain'd.

2. The Fibres being too much upon the Stretch, and their Cohesions with one another lessened, both by the great Quantity of Fat, and the Overlubrication of the Parts therewith, the Force of the Solids is diminished, wherewith they should break and propel the Fluids, and eliminate the useless perspirable Matter sticking in the Ducts. This likewise gives us the Reason, why corpulent People, after a merry drinking Bout, may expect a sorry Time, and why immoderate Venerie, or Study, should procure the same Disease; for the first of these overfills the Vessels, puts them upon the Stretch, weakens their elastick Forces, and renders the Circulation slower in the small Vessels; therefore corpulent People, when very drunk, become livid in the Face, the Blood's Motion being so exceeding slow from the great Distension of the Vessels and Fibres, that 'tis next to Stagnation; nay, sometimes it does really stagnate,

stagnate, and kill the wretched Creature. Hence ensue preternatural Cohesions and *Moleculæ*, which, getting into the Tubes of the extreme Vessels, occasion violent Pains.

Immoderate Venery, by its frequent Convulsions, wears out and debilitates the Spring of the Fibres, and suddenly expels the usefulest Part of the Fluids, while the grosser Parts remain behind, which the muscular and vesicular Force cannot break, before it reaches the Extremities of the Body. The Solids also, after they have been wound up to the highest Spring in every venereal Coitus, presently fall back, relax, and become more passive than before, and continue so a considerable time, thro' the Loss of the nervous Juice expelled in the Convulsion of the Solids, and the slow Secretion of that valuable Liquor in the Brain, because of the Thickness of the Blood, the Weakness of the Heart, and small Force of the vascular Tubes. This is the Reason why Youth spent in profuse Venery, either has its old Age prevented by Death, thro' an early Breach
of

of the Ballance of Nature, or Depressions of the Solids below the Force necessary for Preservation of Life ; or, if the Solids be naturally robust, yet will their Strength be so impaired even in Manhood, as to expose the Body to Gout, Gravel, and Arthritick Pains. This Argument carried a little further will let us into the Secret, why the Children begot after such a wild lascivious Course of Youth, are tortured with the hereditary Diseases of the Gout and Gravel. Assiduous Study exhausts the animal Spirits, (the more is the pity) deprives the Fibres of the nervous Juices, and necessary Supplies, weakens them, and diminishes Evacuations, and disturbs and changes the Secretions.

3. The Parts of the Blood not being duly mixed, but having grosser Parts in it than formerly, when the Solids acted with a full and equal Resistance to its Force, a greater Strength is requisite to propel it, and expel the excrementitious Parts ; which superadded Task the Fibres are now so incapable to discharge, that their natural Strength is impaired in proportion

48 *A Discourse concerning*

portion to the Greatness of the Body's Corpulency.

Those who understand this rational Way of arguing, may see, from these Considerations, what are the best and safest Methods to be taken with a Patient, both for his Health and the Physician's Credit, and why gentle Evacuations, as Bleeding, Vomiting, and Laxatives, will be of special Service, when the gentle Symptoms of Inappetency, Indigestion, Rawness of the Stomach, &c. first seize the Patient; and why all strong Evacuations after the Seizure of the Fit must be highly injurious, and the Effects of the greatest Ignorance: And also, why after the Distemper has taken its Place in the Extremes, (if we will be meddling) we should invite it thither by emollient and relaxing outward Applications mixed with Anodynes, giving inwardly at the same Time rich Wines with Alexipharmicks and Aromaticks; and why, after the Matter is come down, and the Parts become very red or swelled, we are to promote a copious Perspiration in the Place: For, to attempt Dis-

cussions

cussions at that time by Evacuations, and outward Applications of Coolers and Astringents, is to abuse our Senses, to act contrary to Reason, and to use our Skill to turn Nature's preservative and curative Efforts into a mortal Distemper.

Give me leave here to add further, that a sudden Change from either of these Habits of Body (*viz.* either from a lean to a very fat, or from a corpulent to a meagre) can never be without Danger. Moreover, this is the true Reason, why old People of a sudden seeming to renew Youth, turning full in the Body, and more beautiful than formerly, is almost a certain Sign of Death shortly to ensue, or of some long and grievous Illness to come upon them; because their formerly contracted Vessels are again expanded, and filled with a greater Quantity of Fluids, than the present Age and Constitution of Body can bear, especially seeing still new Blood is added in greater Quantity than the former is prepared; for in old Age the Evacuation is mightily impaired, and can neither be

G supplied

supplied by one, nor all of the sensible Evacuations.

And not only lean Persons becoming suddenly fat, but weak Bodies quickly growing stronger, of a lovelier Countenance and better Colour, may justly expect their Health to be in Danger; for they, whose Bodies perspire plentifully, are indeed weaker, but healthier: When this Evacuation is diminished, before they fall sick they become much stronger, by reason of the daily Increase of Fluids which remain in the Capillaries from the accustomed Degree of Perspiration, whereby the Elasticity of the Fibres does also first increase, till from that great Distension, the Ballance of Nature (that is, the *Æquilibrium* betwixt the Solids and Fluids) be overcome, and they lose their Spring and Vigour.

Thus, by producing an extreme Degree of a good Habit, present Danger ensues: For the largest Quantity of this *Plethora* lies in the Capillaries, especially in those where a larger Quantity used to be congested and carried off, *viz.* under the Skin; for, suppose the Body contains 85
Pounds

Pounds of Blood, (by Blood I understand here the whole Fluids in a living Body, because they are all separated from the Blood) perhaps the large, the second and third-Rate Vessels contain not above 25 Pounds, then the minute Vessels which constitute the fleshy Parts and delicate Membranes, may be loaded with 60 Pounds, and more, of nutritive Juices.

These Considerations teach us to what Diseases such Constitutions are chiefly liable, and of what Illness they will most probably die, and also how their Death might sometimes be prevented. The same Thread of reasoning leads us to know, why Persons lately corpulent, but speedily and unaccountably turning lean and meagre, may shortly expect to pay the Debt of Nature, and by what Illness. I could easily here be particular in these Things, but it would increase the Bulk of this Discourse to no purpose; for such as understand the animal OEconomy, and are capable of reasoning from self-evident Principles, cannot be ignorant of, nor need thus to be told these Things: And as for others, however they may

52 *A Discourse concerning*

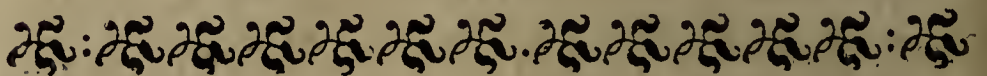
officiously and impertinently intrude themselves, 'tis plain neither God nor Nature ever designed or called them to the Medical Profession ; therefore such as understand not these short Hints, would not be much bettered were I to make a distinct Explication.

Neither are Diminution or Obstruction of Motion, Walking and Action, Drop-sies, Gravel, Gout, and Arthritick Pains, always the Effects of Corpulency, tho they be sufficient to deter a wise and virtuous Man from such Courses, as subject his Body and Constitution to the mercy of these cruel Diseases : But they are also liable to Apoplexies, from the Sizyness and pituitous sluggish Nature of the whole Mass of Blood, and from the Incapacity of such a Mass to pass the incredibly small Meanders of the Brain, and so to afford sufficient nervous Juice : Hence the making of animal Spirits is hindered, as well as the Flux of the few that are separated out of the Brain into the Organs of the Senses and voluntary Motions ; and hence also the hindrance of the Return of others from these Organs into the com-
mon

mon Sensory ; for these nervous Pipes are so compressed externally by a Heap of Fat, and the Coats of the Pipes themselves are so relaxed, that they want Force to propel their contained Fluid backwards to the Brain, or forwards to the Muscles : Hence all cold, pale People, (Cold being the Effect of a slow Circulation, and that of a weak, lax Fibre) catarrhus and leucophlegmatick Constitutions are more liable to these Diseases than others. This Disease is easily foreseen in corpulent People, if they suddenly become dull, slow, lazy, idle, sleepy, and more inactive than formerly : For the same Reason they are also more liable to Carus's and Lethargies, as also to Palsies, from the Incapacity of the Nerves to let the animal Spirits pass them, and the Unfitness of the Blood to pass the Brain for their Separation. Likewise corpulent People are more liable to Polypus's in the Heart, the great Artery, and all the sanguiferous Vessels ; and therefore to Palpitations, Swoonings, and Faintings : They are also obnoxious to an exceeding Shortness of Breath, from the
Breast

54 *A Discourse concerning*

Breast being stuffed with Fat, to frequent Looseness and Diarrhoeas; they can bear no great Evacuations, neither by bleeding, vomiting, purging, nor sweating. Corpulent Women are often barren, and, as *Hippocrates* observes, are seldom long liv'd, the Reason whereof I have sufficiently given above.



C H A P. VI.

Shewing the Cause of seemingly contrary Indispositions in Persons of a corpulent Habit of Body.

ANOTHER Thing not improper to be enquired into on this Subject, is, That, seeing the Inconveniencies to which corpulent People are liable, seem of so different a Nature, from whence arise such contrary Indispositions in sundry Persons, tho they be of the same Habit of Body? To account for this, we must consider the various Constitution of their Fibres; some having naturally more stiff, elastick, and better connected Fibres, others laxer,
less

less coherent, and more dilatable: The Symptoms of both which, give me leave to speak to a little, and to their Effects, and how to be treated; whereby every Man will easily see the Texture of his own Fibres, and to what Diseases his Body is naturally most disposed. Persons of very elastick Fibres are generally lean, dry, perspire much, are of a blackish, dark, or swarthy Colour, are naturally impatient, prone to Action, have strong, hard, large, and unyielding Muscles, clean and firm Bodies; such are subject to inflammatory Diseases, as Pleurifies, Peripneumonies, Squinzies, Phrensys, and Fevers, especially in the Spring and Summer; and in dry Seasons to dry Asthmas, great Pains, Convulsions, Cramps, Watchings, Madness, suppressing of the female Evacuations, Polypus's of the Vessels, &c. The Strength of this Constitution is abated, by diminishing the strong Force and Elasticity of the Solids, relaxing their Parts, widening their Vessels, making way for the free and ready Access of the Fluids, and increasing their Resistance against the Solids. And all this is done by lessening the Quantity of
the

56 *A Discourse concerning*

the Blood, and pouring into it Plenty of thin, softning Liquors, (the chief whereof is warm Water) soft, light, insipid, oily Medicines, small Doses of Opiates often repeated, warm emollient Fomentations, and Baths, living in a cool and moist Air, using thin and watry Meat and Drink, by Idleness, long and sound Sleep, Easiness or Indifference of Mind, and in short, whatever, moistens, softens, dilutes, resolves and cleanses. Such who have weak Fibres, and lax Vessels, have commonly small thin Hair, and sometimes very fair, and flaxen coloured, by reason of its Porosity; their Muscles are small, soft, yielding and loose; their Skin is fair, blanched or white; they are of cold Constitutions, their Extremities are often cold, and they are apt to catch Cold on the slightest Occasion; they have frequent Purgings or Sweatings; they are fat, corpulent and phlegmatick; their Solids are flabby, and soaked in Humidities; they are frequently lazy, indolent and dull, and subject to many chronical Diseases, as Palsy, Catarrhs, Evacuations, Want of Appetite, bad Digestion, Apoplexy, Lethargy,

thargy, and all the sleepy Distempers, Abortions, immoderate *Lochia*, and *Menses*, *Fluor albus*, nervous Consumptions, Atrophys, œdematous and scrophulous Swellings, Diabetes, Incontinency of Urine, involuntary Tears, Deafness from a Relaxation of the Membrane of the Drum of the Ear; Dropsies of the Head, Breast, Belly, and whole Body; Blindness thro' a Relaxation of the *Retina* in old People; Falling down of the Neck of the Womb and Fundament, with many other Maladies, most whereof are chronical or of long Continuance, from this one fruitful Spring, *viz.* weak and lax Fibres and Vessels: All which are cured by simple and earthy Aliments, almost of the same Nature, before they be taken into the Stomach, with those Juices that are in a sound Body, as Eggs, Panados, rough Wines; by austere and acid Medicines given, Friction with a Flesh-Brush or coarse Cloth, Exercise, especially Riding, the cold Bath, Labour, and whatsoever Means will invigorate, and stiffen the Solids, and bring them to an *Æquilibrium* or just Balance with the Fluids, and raise and encrease the Tone and Elasticity of the Fi-

H

bres.

58 *A Discourse concerning*

bres. But neither of these Methods must be continued too long, or after their desired Effect is produced, lest,

Dum vitant stulti Vitia, in Contraria currunt :

And so the Patient,

Incidat in Scyllam, cupiens vitare Charybdim.

One Way whereby we may be able to guess at the Fluidity of the Blood, or Indilatability of the Solids, is from the different Degrees of the Body's length betwixt lying down in the Evening and rising in the Morning; which I am ready to believe is not wholly owing to the Repletion of the interosseous Cartilages with Fluids, but rather to a Dilatability of the Fibres, and their Interstices in the spongy Parts of the Bones themselves, from a Repletion of their Vessels (which convey Nutrition to them) when the Body lies so long in a horizontal Posture, and paralytick State during Sleep, and the Bones are freed from the Pressure of the Body's Weight, which they sustain, when

'tis

'tis in a perpendicular Position: And this Difference of Stature I have sometimes tried, and found it to vary in several Persons of the same Age, Sex, Climate, and Way of Life; for lean, blackish, swarthy, brown-coloured, or hard-muscled Persons, have measured half an Inch short in the Morning, of what fair, fine complexioned, or white, pale People have measured; I mean the last have exceeded the others Increase of Stature so much after the Night's Rest. This Difference arises in the healthy State, from a Dilatibility and Indilatibility of the Fibres of different Persons. But then I have observed a very sensible Alteration of this Morning Increase in the same Person, it being considerably larger in a healthy than in a sickly State.

These Diseases are occasioned by a great Viscidity of Blood: And I particularly observed this in two Patients labouring under quotidian Agues; for, as the animal Juices recovered their natural Fluidity, and the Fibres their true Elasticity, *i. e.* as the Distemper went off, the Body's Length increased daily every Morn-

60 *A Discourse concerning*

ing, till it returned to its natural Size when in Health. Observations in other Diseases may not perhaps be wholly useless in Practice.

But to return to the Query it self; the seemingly contrary Indispositions in different Persons of the same corpulent Habit, appear to owe their Rise to a different Constitution of the Fibres, or different Rarity or Density of the Membranes of the Body: For such whose Solids are laxest, and their Vessels the weakest over the whole Body, will be more easily subject to Leucophlegmacys, Corpulency and Dropsies: Such Bodies are so naturally disposed to Corpulency, that nothing but Temperance, great Exercise, and much terrestrial Food, can prevent their growing large, and becoming a heavy Load to themselves. On the contrary, in such whose Bodies are endued with more elastick Solids and stiff Fibres, the Accumulation of superfluous and pernicious Juices is prevented, not only near the Centre of the Body, but upon the whole Surface of it; that is, not only where the Blood has but short Course from the Heart,

till

till it returns again to its Fountain, but where the Course is far, and the Stretch long, the Divisions and Sub-divisions of the Vessels many: For when the Blood's Velocity is retarded by so many Angles, Circumvolutions and Windings, thro' the Capillaries which are so very minute and numerous, then it is that either the Blood Vessels distend and inflame, or the nervous Juice and Lymphaticks congest, such as are at the Extremes of the Legs, Feet, Arms, and Hands: This occasions Goutish, Arthritick, or Rheumatick Pains, oedematous and dropfical Swellings of the Parts. Now the Velocity of the Blood is always in Proportion to the Branches or Ramifications gone off from the great Artery. And the common Proportion which Dr. *Keil*, after many Observations and Experiments, found to obtain between the Sections of the common Trunk and the Sum of the Sections of its Branches, was nearly that of $\frac{1}{1} \div \frac{1}{2} \div \frac{1}{4}$; from which Supposition, if we desire to know the relative Velocity of the Blood at the 30th Division, the Logarithm of $\frac{1}{1} \div \frac{1}{2} \div \frac{1}{4}$ is 9,9065783; which multiplied by 30, the number of

Division,

62 *A Discourse concerning*

Division, it gives 7,1973490, to which the Number answering in the Tables is 0,001575; and consequently the Velocity at the Heart is to the Velocity at the 30th Division, as 1 to 0,001575, *i. e.* as 1000000 to 1575, or as 635 to 1: And therefore, if the Blood in the *Aorta* moves 55 Feet, or 660 Inches in a Minute, it will at the 30th Division move little more than an Inch at the same Time; and at the 40th Division the Diminution of Velocity will be as 5456 to 1; and at the 50th as 46882 to 1; and at the 100th Division it will be very near as 2200000000 to 1. This will hold true, if the Sections are augmented thro' all the Divisions of the Arteries constantly in the same *Ratio* of 124 to 100; But perhaps a less *Ratio* than this may take Place in the small complicated Arteries, and consequently the Diminution of the Velocity may not be so great as this Proposition supposes, tho the number of Divisions and Complications may be much greater: However, the Proposition serves to shew (which is what I intended to do) that, if the Circulation of the Blood

near

near the Surface of the extreme Parts be very slow, when the Circulation is weak, slow, and languid in the great Vessels, how prodigiously must it be after so many Ramifications and Divisions as happen betwixt the Heart and the Surface of the Legs and the Feet? No Wonder then that we find Gouty, Arthritical, and Dropical Diseases so often in these Parts, in Persons of a cold Constitution, or lax Fibres and weak Vessels; nay rather, what a Wonder is it that 'tis not always so with such People? How easy is it for these Diseases to overtake the sluggish, luxurious and corpulent? How strange is it that either they should live so long, or that any of them should be without these and other Distempers.

But what I mean by different Constitutions, is no other than various Motions of the Blood in different Persons: And the Cause of this Diversity of the Blood's Motion, or different Constitution, is not so much owing to the Quantity and Size of the moving Fibres, as to their Strength and Vigour, and consequently to their Pulse and Tone; neither does it depend

on

64 *A Discourse concerning*

on the Substance and State of the Blood, or the Plenty of the Vessels, their Largeness or Condition, but rather on the hereditary Disposition, Age, Sex, Climate and Air, which variously affect and alter the Temperament of Humours; and the Contraction of the Fibres, and the Strength and Habit of the Vessels do so vary the Blood's Motion, that 'tis never one and the same in the same Man at all the Seasons of the Year, with all sorts of Diet, and in every Climate.

From Constitutions in general, I shall lay down some Signs of a healthy State and long Life: But to come to the Knowledge of these, we must gather our Observations as far back as the Womb; nay, as the Act of *Coitus*, wherein we were begotten.

1. Persons must be generated of healthy, vigorous Parents, that are come to full Age, who have rarely used Venery; but when they set to it, did it with Heat, Strength, full Desire, and in the Morning, after sound Sleep, perfect Digestion, especially in the Spring of the Year.

2. The

2. The Sperm ejected must not be spumous, watry, insipid, scanty, or poor, but strong, retained some time, brought to its utmost Perfection in the seminal Bladders by the Exhalation of the serous Part, and by a Retention and Congestion of the more viscous, odoriferous and lively.

3. The *Uterus* and *Ovaria* must be fitted and disposed for the Reception of it, and for the Inflammation, Tumefaction, Separation, and Dropping off of the *Ova* into the Fallopian Tubes, which must be open, and give a free and undisturbed Passage to the *Ovum* thro' these Tubes into the Womb; and that the Womb be fit for the Reception and Nutrition of this Stranger.

4. 'Tis necessary that the pregnant Mother be sound, use herself to Labour or Exercise; that she have her Passions under the Government of Reason, and enjoy a quiet Mind, that she have only one Foetus in her Womb at a time, that she may afford Plenty of good wholesom Nourishment.

5. That she do not bring forth the Child till nine full Months after Conception,

66 *A Discourse concerning*

and that it come into the World at a proper Time, especially in Winter.

6. That the Child's Growth after its Birth be slow, and proportionable in every part, still increasing in Substance and Strength together, till he be above twenty five Years old.

7. The Habit and Shape of his Body must be broad, the Breast large, broad or square, the Belly light and small; the Shoulders, Arms, Thighs and Legs strong, muscular and hairy; the Scull large and capacious, especially the hinder Head; his Skin hard, Body fleshy, but not corpulent or gross; his Colour blackish, swarthy, or brown.

8. His Blood must be florid but thick, which when let out, and standing a little time, becomes fibrous and strong, and will readily coagulate into a hard Substance; the other Humours should be plentiful and rough, moderately hot, less oily and soft.

9. Respiration must be slow, large, full, easy, even, with the least visible Alteration of the Organs of the Lungs.

but

10. The

10. The Pulse of the Artery must answer the breathing, be slow, large, full, equal, strong, constant, or steady, not disposed to change from slight Causes.

11. His Provocation to Stool must be slow, and the Fæces voided of a good Consistence, without Inconvenience to the Body.

12. His Urine little, but well digested.

13. His Perspiration free, so as to have frequent gentle Sweats.

14. He must have a good Appetite, and that succeeded by a good and perfect Digestion.

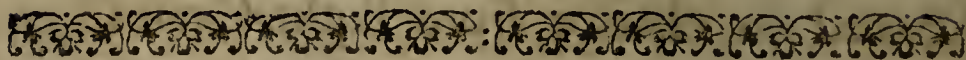
15. He must follow moderate Labour, neither be lazy, idle, nor very vehement in Exercise or Work.

16. He should be of a Genius not too bright, and a Judgment not too penetrating or profound.

17. There must be few violent Motions of Body or Mind, but a Constancy amidst accidental Changes and Alterations.

Where all these Signs concur, that Person has the best Prospect of good Health

68 *A Discourse concerning*
and long Life, if withal he observes the
Rules of Temperance and Moderation.



C H A P. VII.

Of the Cure of Corpulency.

THE last Head I propos'd to speak to on this Subject, was, What Means were proper to prevent or remove a troublesome, overgrown, and corpulent Habit of Body, and reduce it to a better and healthier State: And here I shall not meddle with the Pharmaceutical part, or that which belongs to Medicine; this small Treatise not being intended for Gentlemen of that Profession, but for others in general. I shall therefore content my self with directing only to the Use of such of the Nonnaturals, as shall be proper for that State of Body which I think may be termed morbid.

I. Make choice of a clear, serene Air to live in, upon a dry, sandy, rising Ground, not bordering on Marshes, Fens, Ponds,

Ponds, or stagnant Waters ; at a Distance from Cities, woodland Countries, and Furnaces where Minerals are melted or refined.

2. Use Exercise and Labour, which may mix, digest, and separate the Juices of the Body, cleanse the Insides of the vast number of Pipes and Strainers whereof the Body is composed, and which may give the Solids a firm and lasting Tone, whereby they may cast the Humours into their respective Canals, and throw off superfluous Juices and Redundances, and assist Nature in her secret and necessary Distributions. These Motions and Agitations of the Body by Exercise clear the Understanding, keep the Imagination undisturbed, exalt to the highest Pitch, and greatest Perfection those Spirits requisite for the proper Exertion of our intellectual Faculties. And of all other Exercises, that of Riding is the most conducive to Health, and accommodated to our Bodies, and gives us the best and wholesomest Agitations and Shocks. And tho some plead that Riding conduces to the fattening of the Body, even to Corpulency,

lency ; I answer, that tho Riding seldom and gently, with an ambling Motion, may have some Tendency to it, yet frequent and vigorous Exercise this way will so help to prepare the Blood for running over its Strainers, and for casting off those Redundances, which occasion Corpulency, that the wholesom, nutritious Juice will remain in Plenty, and yet that brisk Tone wherewith the Solids are invigorated, will prevent Congestion and Accumulation of superfluous Matter.

Nature has indicated to us the Necessity and Excellency of Exercise.

(1.) From the proper Make of the Body for it, *viz.* the Activity and Pliableness of the Parts to it.

(2.) From the general Desire which all young Animals have for it, their daily Practice, and the Gratification of those Desires, by leaping, running, dancing and playing.

(3.) From the Poverty and Misery which Inactivity, Laziness, and Idleness produce ; and from the great Things which Activity, Diligence, and Exercise procure,

cure, as Food, Clothes, Honour, Riches, Liberty and Peace.

(4.) From the black and long Catalogue of violent and chronical Diseases, both of Body and Mind, which are the natural Attendants of Sloth, Laziness, and Indolence, and prove so many Judgments overtaking the negligent Wretch, and punishing his stupid Sloth ; so that Mr. *Dryden* might well say,

The first Physicians by Debauch were made,

Excess began, and Sloth sustain'd the Trade :

By Chase our long-liv'd Fathers earn'd their Food,

Toil strung the Nerves, and purified the Blood :

Better to hunt in Fields for Health unbought,

Than see the Doctor for a nauseous Draught.

The wise for Cure on Exercise depend ;

God never made his Work for Man to mend.

72 *A Discourse concerning*

3. Their Diet should be moderate, spare, and of the more detergent kind, as Bread of Oats, Rye, or Barley ; their Meat of the less nutritious sort, as Fish, but not Shell-fish, for that feeds very much, and is hard to be digested and eliminated out of the Body, for which reason 'tis of special Service in Consumptions, Fowl, &c. Veal, Pork, Bacon, Lamb and Mutton are the richest, *i. e.* afford most Nourishment ; Fowl has less than the others, but Fish least of all ; Beef is very strengthening, but then it requires longer time to go off the Stomach, and a smaller Quantity will supply the Demands of Nature. A Diet of Herbs is very serviceable here, for they afford less Nourishment than either Bread or Meat, and yet give the Stomach and Body more Trouble to digest them. Abstinence now and then is also very advisable.

4. Such as are afraid of Corpulency should refrain mild and smooth Liquors, as mild Ale, or soft, balsamick Wines ; and should use such Wines as have an Acidity, Tartness, or Sharpness in them, and these too very thin, as Rhenish,
White

White Port, Wines lowered with Water, or Water a little acidulated with Vinegar, or Juice of Lemons. Stale Ale or Beer quietly stimulates the Fibres, invigorates the Solids, promotes Digestion and Perspiration; and by the Use of this Method I have known some lose two Stone of Fat in one Week's Time: But this hasty Change is wholly unadvisable, being of more dangerous Consequence than that State they make such precipitant Haste to get out of.

5. Let Sleep be short, just enough to serve for Digestion and Nutrition, not to further a great Relaxation, and not a Dilatability of the Fibres, and occasion a too plentiful Secretion of nervous Juice and nutritive Parts: 'Tis also good to rest on a Bed not too soft or warm, for that relaxes still more, and diminishes the Tone of the Fibres.

6. The elevating Passions ought not to be too much indulged; and tho the depressing Passions, such as Sorrow, Grief, &c. as well as those that wind up the Tone of the Fibres too high, as violent Anger, and sudden Fright; I say, tho they tend

to depauperate the Body when they are indulged, yet we ought to guard against them; for the Cure is worse than the Disease.

7. All those Things which promote insensible Perspiration; as (1.) Bitters and Aromatics, to wit, Gentian, Orange-peel, Camomile flowers, Wormwood, Myrrh, Cresses, &c. which by their gentle Warmth give a Tensity to the Fibres of the Body, and cause a most insensible *Diaphoresis*. And hence 'tis that some People cannot endure the Use of Bitters, because they occasion such a vast Dissipation of the Fluids thro' the Skin, that they are parched with a most intolerable Thirst.

(2.) Such Things as by their Stimulancy of the Solids corrugate and draw them up into a greater Tension and Stiffness, and so act with the fuller and freer Force over the Fluids, and prevent their Redundances and Cohesions; such are Vinegar, Tartar, Nitre, Sea-salt, but above all Vinegar of Squills.

(3.) Such Things as fuse and rarifie the Blood by the Subtility and Solidity of their

their Parts, and so prepare it for passing easily over its secretory Ducts, and send off its Superfluity by the Skin, as a continued Diet of the Woods, *viz.* *Guaia-cum, Sassafras, Juniper, Sarsaparilla, &c.*

(4.) By the Use of Flannel Shirts; these are exceedingly injurious to weak People, whose Transpiration is generally too profuse: For, seeing Perspiration doubles all the sensible Evacuations, and is to the Discharge by Stool as 40 to 4, *i. e.* ten Times greater; then it will follow, that a Man will not be more weakened by having ten Times as many Stools as he used to have, than he will be by only having Perspiration double what it was before. We are satisfied that the greater Part of our Stools is only the grosser Part of our Food, which could not enter the Mouth of the Lacteals; for the bilious and pancreatick Juices, together with the glandular Liquor excreted from the Intestines, scarce make above $\frac{1}{10}$ of what is voided by Stool: Wherefore there is as much drained from the Blood in one Day by Perspiration, as is ejected by Stool in a hundred: Therefore if the Use of

76 *A Discourse concerning*

Flannel double the Quantity of ejected perspirable Matter, it will certainly reduce the Person as much as if he had discharged a hundred Times his usual and healthy Quantity by Stool in the same space of Time. 'Tis certain that excessive Purging, or a Diabetes, weakens the strongest Constitution, and reduces the most corpulent Habits; and if so, why not an increased Perspiration?

(5.) The cold Bath wonderfully promotes this Design of extenuating the Body;

1. By its great Pressure upon our Bodies, whereby it straitens the Vessels, and so dissolves the Humours, and prepares them for Filtration by the Glands, and propels the viscid Matter which furred up the Vessels; hence the Fluids move more freely and easily: And from the Pressure on the Surface of the Body, and straitning of the Vessels, more Blood must repair to the Brain, and occasion a more plentiful Secretion of nervous Juices; whereby the Solids will be more invigorated, their Tone increased, and all the Secretions promoted. Now this
Pressure

Pressure of Water added to the Air must be very considerable, and accomplish some great Ends. Dr. *Wainwright* proves, that, when the Mercury stands highest in the Barometer, our Bodies (supposing the Surface of the Skin equal to 15 Square Feet) are pressed upon by a Weight of Air equal to 39900 Pounds Troy. Now suppose a Body 35 Feet under Water, it sustains double that Pressure it did in the Air, *i. e.* 79800 Pounds Troy Weight, (for *Galilæus* discover'd by pumping, that the Pressure of a Pillar of the Atmosphere is equal to a Cylinder of Water 35 Foot high of the same Basis) but 35 Foot being too deep for bathing, let us only suppose a Body, whose Surface is 15 Square Feet, 2 Feet under Water, then it sustains a Weight of Water added to that of Air equal to 2280 Pound Troy : For 2, the number of cubical Feet of Water, pressing upon 15 Foot square of the Skin, multiplied by 76, the number of Pounds in a cubical Foot of Water, is equal to 152, multiplied by 15, the supposed number of square Feet on the Surface of the Body, which is equal to 2280 Pound Troy.

78 *A Discourse concerning*

Troy. Now if the Water bathed in be saltish, its Pressure will be considerably greater ; therefore Immersion in Sea-water must be hurtful to meagre People, unless some Necessity oblige their Compliance with it, as the Bite of some mad Animal, or an Atrophy from a relaxed Fibre.

2. Another Thing which renders Bathing of an attenuating Nature, is the Humidity wherewith it relaxes the Body, by insinuating it self into the Pores of the Skin ; but more of this is to be expected from the hot Bath, few Persons having Resolution enough to continue in the cold Bath till it have this Effect.

3. Cold Bathing promotes Perspiration from its Cold, causing a Contraction of the Fibres, as well as the Pressure.

(6.) Friction with a Flesh-Brush, Hair or hard Cloth, will much promote Perspiration, by rubbing off the Mucus and Dust on the Surface of the Skin, breaking the grosser Parts of the Fluids under the Skin, and propelling them forward in the Vessels.

(7.) Gentle

(7.) Gentle Evacuations are helpful to reduce the Body, therefore corpulent People should always have an open Belly, and use gentle Diureticks.

(8.) Lastly, Smoking of Tobacco, by stimulating the Nerves of the Mouth, draws out much Phlegm from the salivary Glands, and diminishes the Fluids.

These Things put in Practice will not only prevent Corpulency in those who are disposed to it, but reduce very gross Bodies.

F I N I S.

E R R A T A.

PAge 10. l. 22. *for defend read distend.* p. *ib.* l. *ult.*
f. fiery r. fizy. p. 14. l. 10, 11. *r.* The Moisture and
 Exhalation from Vegetables is very great, for he found,
&c. p. 15. l. 8, 9. *r.* And in this Propulsion the Waste of
 the Liquor is. p. 17. l. 8. *f.* Floods *r.* Foods. p. 19. l. 15,
 16. *r.* suppose the Chyle should be strained off, and get
 into the Lacteals, yet will it be. p. 36. l. *penult.* *r.* Come
 sooner to wrinkled Brows. p. 38. l. 4. *for plastick, r. ela-*
stic. p. 44. l. 2. *f.* Trunks, *r.* Lungs. p. 55. l. 18. *r.* *Sup-*
pressions.

CONSTITUTION

1. The Government of the United States shall be composed of three distinct branches: legislative, executive, and judicial; and these branches shall be separated from each other, and no exercise of power shall be given to any one branch which is not given to the others.

2. All legislative Powers herein granted shall be vested in a Congress of the United States, which shall consist of a Senate and House of Representatives.

3. The House of Representatives shall be composed of Members chosen every second Year by the People of the several States, and the Electors in each State shall have the Qualifications requisite for Electors in that State.

4. No Representative shall continue for more than three Terms; but after three Years he may again be elected.

5. The Senate shall be composed of two Senators from each State, chosen by the Legislature thereof, for six Years; and after two Years they shall be divided so that one-third may be chosen every second Year; but no Senator shall continue for more than two Terms; and after two Years he may again be elected.

6. The Electors in each State shall have the Qualifications requisite for Electors in that State.

7. The Congress shall assemble at least once in every Year, and the Meeting of them in each Year shall begin at Noon on the first Monday in October, and shall continue until they adjourn.

8. The Congress may determine the Time, Places, and Manner of holding Elections for Senators and Representatives, but no Election shall be held more frequently than once in three Years; and they may also determine the Time, Places, and Manner of holding Elections for Senators and Representatives, but no Election shall be held more frequently than once in three Years; and they may also determine the Time, Places, and Manner of holding Elections for Senators and Representatives, but no Election shall be held more frequently than once in three Years.

ARTICLE II

THE PRESIDENT

1. The executive Power shall be vested in a President of the United States, who shall hold his Office for four Years, and until he is elected to that Office he shall be ineligible to that Office.

2. The President shall be elected by the Electors in each State, and the Electors shall have the Qualifications requisite for Electors in that State.

3. The President shall be elected by the Electors in each State, and the Electors shall have the Qualifications requisite for Electors in that State.

4. The President shall be elected by the Electors in each State, and the Electors shall have the Qualifications requisite for Electors in that State.

5. The President shall be elected by the Electors in each State, and the Electors shall have the Qualifications requisite for Electors in that State.

6. The President shall be elected by the Electors in each State, and the Electors shall have the Qualifications requisite for Electors in that State.

7. The President shall be elected by the Electors in each State, and the Electors shall have the Qualifications requisite for Electors in that State.

8. The President shall be elected by the Electors in each State, and the Electors shall have the Qualifications requisite for Electors in that State.

9. The President shall be elected by the Electors in each State, and the Electors shall have the Qualifications requisite for Electors in that State.

10. The President shall be elected by the Electors in each State, and the Electors shall have the Qualifications requisite for Electors in that State.